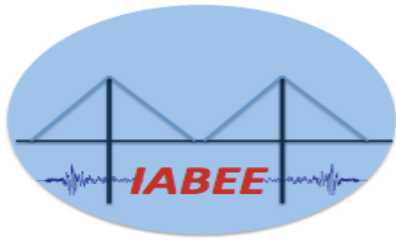


The 3rd International Bridge Seismic Workshop



October 2-3, 2019

Seattle, Washington, USA



**International Association
Bridge Earthquake Engineering**

INTERNATIONAL ASSOCIATION OF BRIDGE EARTHQUAKE ENGINEERING (IABEE), USA

BRIDGE AND STRUCTURE OFFICE - WASHINGTON STATE DEPT. OF TRANSPORTATION, WA, USA

COLLEGE OF CIVIL ENGINEERING - TONGJI UNIVERSITY, SHANGHAI, CHINA

DEPARTMENT OF CIVIL ENGINEERING - UNIVERSITY OF WASHINGTON, SEATTLE, WA, USA

Phil Yen, Organizer

Dawn Lehman, UW & Bijan Khaleghi, WSDOT Chairs

October 2, 2019

Plenary Session I - Keynote Lectures (8:30-12:10) HUB 250

Concurrent Session I (13:30-17:30)

Session I A - Seismic Design Track *HUB 214*

Session I B - Seismic Analysis/Assessment *HUB 340*

Session I C - Seismic Retrofitting & Ground Motion *HUB 337*

October 3, 2019

Plenary Session II - Keynote Lectures (8:30-12:10) HUB 250

Concurrent Session II (13:30-17:30)

Session II A - Seismic Design *HUB 214*

Session II B - Seismic Performance Testing/Assessment *HUB 332*

Session II C - Seismic Retrofitting & Mitigation Measures *HUB 337*

Meeting at University of Washington

Husky Union Building (HUB)

4001 E Stevens Way NE. Seattle, WA 98195

<https://hub.washington.edu>

Workshop Schedule:

October 1, 2019

Arrival and Hotel Check in @ Silver Cloud University District

5036 25th Avenue NE,

Seattle, WA 98105

(206)526-5200

4 PM – 7 PM ----- Registration @ HUB 307

October 2, 2019

8:30 – 12:10 ----- Workshop Opening Ceremony + Plenary Session I

12:10 – 13:30 ----- **Lunch @ HUB 334 & HUB 332**

13:30 – 17:50 ----- Concurrent Session I

October 3, 2019

8:30 – 12:20 ----- Workshop Plenary Session II

12:20 – 13:30 ----- **Lunch @ HUB 334 & HUB 340**

13:30 – 17:30 ----- Concurrent Sessions II

17:30 – 18:00 ----- Closing Ceremony @ HUB 214

October 4, 2019 Technical Site Visits

9:00 @ Silver Cloud University District Hotel Lobby

9:00 – 11:30 I-90 Floating Bridge and Light Rail Construction

13:00 – 15:00 SR-99 AWV (Alaskan Way Viaduct) Tunnel

	<ul style="list-style-type: none"> Current PEER (Pacific Earthquake Engineering Center) Research Supported by the California Transportation Systems Research Program - Dawn Lehman (Incoming Chair of PEER Institutional Board and PEER Researcher, Professor of Civil & Environmental Engineering) & Khalid Mosalam, Taisei Professor of Civil Engineering, Director of the Pacific Earthquake Engineering Research Center, UC Berkeley (11:40-12:10) 	
12:10 – 13:30	Lunch @ HUB 334 & HUB 332	
13:30 – 17:30	<p><u>Concurrent Session IA - Seismic Design Track</u> HUB 214</p> <ul style="list-style-type: none"> Smart shear keys to prevent bridge girders from falling off during earthquakes and tsunami – Genda Chen, Missouri University of Science and Technology, Rolla, USA (13:30-14:05) Connections for resisting longitudinal seismic loads in bridges made with pretensioned concrete girders – John Stanton, University of Washington, USA (14:05-14:40) Effect of design details on seismic response of RC bridge columns under long duration ground motions – Mohamed A. Moustafa, Univ. of Nevada, Reno, USA (14:40-15:10) -----Break-----20 minutes (@ HUB 214) (15:10-15:30) Longitudinal deck joints between concrete girders made using UHPC – Paolo Calvi / John Stanton, University of Washington, USA (15:30-16:00) The seismic design of SR99 Tunnel in Washington State, - Yang Jiang, Bridge & Tunnel Group, HNTB, USA (16:00-16:30) Shaking table tests of RC columns with a low-cost sliding pendulum system under bi-directional excitations – Hiroki Yamaguchi, Waseda University, Tokyo Japan (16:30-17:00) Performance-based seismic design and evaluation of steel eccentrically braced frames with tubular links as bridge bents – Ahmad Shafiq/Carlos Ventura, Hatch-Vancouver, BC, Canada (17:00-17:30) 	<p style="text-align: center;">Bruce Johnson</p> <p style="text-align: center;">Jeffery Berman</p>
13:30 – 17:30	<p><u>Concurrent Session IB - Seismic Analysis/Assessment</u> HUB340</p> <ul style="list-style-type: none"> Optimal Decision-Making for Improving Bridge Resilience - Jerry Shen, FHWA Bridge and Structures Office DC (13:30-14:05) Shaking table test study on collision effect of small radius curve bridge under near-fault ground motion - Chiyu Jiao, Beijing Urban Transportation Infrastructure Engineering Technology Research Center, Beijing, China (14:05-14:40) 	<p style="text-align: center;">Dawn Lehman</p>

13:30 – 17:30	<ul style="list-style-type: none"> • <i>AASHTO ABC Guide Specifications, Seismic Design Requirements for Connections</i>, Greg Banks; PE, SE, Project Manager, WSP (14:40-15:10) -----Break----- 20 minutes (@HUB 214) (15:10-15:30) • <i>Seismic design of a long-span continuous steel truss bridge</i> – Yan (Helen) Xu, Tongji University, Shanghai, China (15:30-16:00) • <i>Seismic Assessment of Concrete Balanced-System Bridges- Daniele Malomo Modelling and Structural Analysis Consulting (Mosayk Ltd), Pavia, Italy (16:00-16:30)</i> • <i>Development of the dead weight compensation system to improve the anti-catastrophe performance of a viaduct</i> – Akihiro Toyooka , Railway Technical Research Institute, Japan (16:30-17:00) • <i>A New Seismic Design Method of Simply Supported Girder Bridges for Very Rare Ground Motions in the Transverse Direction</i> - Tianbo Peng, Tongji University, Shanghai, China (17:00-17:30) 	David Lau
13:30 – 17:30	<p><u>Concurrent Session IC - Seismic Retrofitting & Ground Motion (HUB 337)</u></p> <ul style="list-style-type: none"> • <i>Study on follow-up processing of crossing-fault hualien bridge damaged by the 0206-Hualien-Earthquake 2018</i> – Yu-Chi Sung, National Taipei University of Technology, Taipei, Taiwan (13:30-14:05) • <i>3-D ground-motion simulations of magnitude 9 earthquakes on the cascadia subduction zone</i> - Art Frankel, U.S. Geological Survey, Seattle WA USA (14:05-14:40) • <i>Earthquakes and Seismic Design for Bridges in Virginia</i> – Junyi Meng, Assistant State Structure and Bridge Engineer, Virginia DOT (14:40-15:10) -----Break----- 20 minutes (@ HUB 214) (15:10-15:30) • <i>Seismic behavior of curved bridge subjected to near-fault ground motions</i> – Shuichi Fujikura, Utsunomiya University, Japan (15:30-16:00) • <i>UHPC jacket retrofitting of reinforced concrete bridge piers with low flexural reinforcements</i> –Teng Tong, Southeast University, Nanjing, China (16:00-16:30) • <i>The effect of ground deformation and strong ground motion on the damage of a continuous curve viaduct damaged by near-fault ground motion</i> - Gakuho Watanabe, Yamaguchi University, Japan. (16:30-17:00) • <i>Comparative assessment of seismic collapse risk for non-ductile and ductile girder bridges</i> - Libo Chen, Fuzhou University, Fuzhou China. (17:00-17:30) 	Kuo-Chun Chang Koji Kinoshita
18:00	<u>Adjourned</u>	

18:30 – 20:30	<i>Award Dinner - sponsored by WSP, HNTB, Trantech Mama Malina's. 5101 25th Ave NE, Seattle, WA 98105</i>
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October 3, 2019 (Thursday)

Time	Presenting Title & Presenter	Moderators
07:00 -08:00	<i>Breakfast @ Silver Cloud Hotel</i>	
	<p><i>Plenary Session II (Keynote Lectures)</i> HUB 250</p> <ul style="list-style-type: none"> <p>• <i>Performance-Based Seismic Design of Bridges - What Is It and How Will It Change Design Practice?</i> <i>– Lee Marsh, PhD PE Deputy Director – America’s Technical Excellence Center, WSP (8:30-9:10)</i></p> <p>• <i>Capacity- Based Inelastic Displacement Spectra for Reinforced Concrete Bridge Columns Subjected to Far-Field and Near-Fault Ground Motions</i> <i>- Kuo-Chun Chang, A Distinguished Professor of the Department of Civil Engineering of National Taiwan University (NTU), Taiwan (9:10-9:50)</i></p> <p>• <i>Effects of Cascadia subduction zone M9 earthquakes on bridges</i> <i>- Marc Eberhard, University of Washington, USA (9:50-10:25)</i></p> 	<p><i>Michele Calvi</i></p>
08:30 – 12:20	<p>----Break----- 15 minutes (@ HUB 250) (10:25-10:40)</p> <ul style="list-style-type: none"> <p>• <i>Failure Mechanism of the Furyo Daiichi Bridge in the 2016 Kumamoto Earthquake</i> <i>– Kenji KOSA, Professor Emeritus, Kyushu Institute of Technology, Kitakyushu, Japan & Technical Advisor, Hanshin Expressway Technology Center, Osaka, Japan (10:40-11:15)</i></p> <p>• <i>Concrete Filled Steel Tubes for Accelerated Bridge Construction and Enhanced Structural Performance</i> <i>– Dawn E. Lehman Dept. of Civil Engineering, University of Washington, USA (11:15-11:50)</i></p> <p>• <i>Seattle Waterfront Construction Update –</i> <i>- Angie Brady Deputy Director, Office of the Waterfront and Civic Projects, City Gov. of Seattle (11:50-12:20)</i></p> 	<p><i>John Stanton</i></p>

12:20 – 13:30	Lunch @ HUB 334 & HUB 340	
13:30 -17:30	<p><u>Concurrent Session IIA - Seismic Design</u> HUB 214</p> <ul style="list-style-type: none"> • <i>Advances in vibration-based structural health monitoring of bridges – David Lau/ Serge Desjardins, Ottawa-Carleton Bridge Research Institute, Carleton University, Ottawa Canada. (13:30-14:05)</i> • <i>Effects of prestressed tendon layouts on seismic fragility of precast segmental bridge columns – Yuye Zhang, Nanjing University of Science and Technology, China (14:05-14:40)</i> • <i>Hysteretic cyclic testing of self-centering precast segmental RC bridge columns under diagonal loads – Junfeng Jia, Beijing University of Technology, Beijing, China (14:40-15:10)</i> <p>----Break----- 20 minutes (@ HUB 214) (15:10-15:30)</p> <ul style="list-style-type: none"> • <i>Unilateral cyclic loading tests on repaired 0.2-scale RC column models using strain-hardening fiber-reinforced cement-based composites - Koji Kinoshita, Department of Civil Engineering, Gifu University, Japan (15:30-16:00)</i> • <i>Seismic risk analysis and hybrid simulation for function separation bridge - Ji Dang, Saitama University, Japan (16:00-16:30)</i> • <i>Development of hybrid simulation method and its application on bridges and other infrastructures - Cheng-Yu Yang, Tongji University, Shanghai, China. (16:30-17:00)</i> • <i>Trial design study on earthquake resilient highway bridge with tall piers – Zhehan Cai, Fuzhou University, China (17:00-17:30)</i> 	<p>Genda Chen</p> <p>Shuichi Fujikura</p>
13:30 -17:30	<p><u>Concurrent Session IIB - Seismic Performance Testing/ Assessment</u> HUB 332</p> <ul style="list-style-type: none"> • <i>Effect of skew on support length demands of bridges with seat-type abutments – Suirwen Wu/ Ian Buckle, University of Nevada, Reno, USA (13:30-14:05)</i> • <i>Testing of a low damage multi-joint rocking pier using the multi-performance design concept– Royce Liu/ Alessandro Palermo, University of Canterbury, Christchurch NZ (14:05-14:40)</i> • <i>Rapid post-earthquake safety evaluation of a suspension bridge using fragility curves and strong motion data – Roy A. Imbsen, Imbsen Consulting, USA (14:40-15:10)</i> <p>-----Break----- 20 minutes (@ HUB #214) (15:10-15:30)</p> <ul style="list-style-type: none"> • <i>Analysis on seismic response of deep-water composite bridge piers considering fluid-structure interaction – Qihong Zhao, Tianjin University, Tianjin, China (15:30-16:00)</i> 	<p>Marc Eberhard</p> <p>Jianzhong Li</p>

	<ul style="list-style-type: none"> • Effect of underground beam on seismic damage of railway rigid frame viaduct - Meguru Onodera, Railway Technical Research Institute, Japan. (16:00-16:30) • Experimental study on seismic behavior of integral abutment-pile-soil under low-cycle pseudo-static test – Fuyun Huang, Fuzhou University, China (16:30-17:00) • Component-level analysis of bridges structures under extreme wave loading - Michael Motely, Associate Professor, Department of Civil & Environmental Engineering, University of Washington (17:00-17:30) 	
13:30 -17:30	<p><u>Concurrent Session IIC - Seismic Retrofit and Mitigation Measures</u> HUB 337</p> <ul style="list-style-type: none"> • Seismic mitigation and design of single pylon cable-stayed bridge – Qiang Han, Beijing University of Technology, China (13:30-14:05) • Boeing access road bridge seismic retrofit - Hana D'Acci, Jacobs Engineering, USA. (14:05-14:40) • Strain limits and plastic hinge lengths for displacement-based seismic design of circular bridge columns - Chad Goodnight, WSP (14:40-15:10) <p>-----Break----- 20 minutes (@ HUB #214) (15:10-15:30)</p> <ul style="list-style-type: none"> • Shaking Table Test of Bridge with Scoured Pile Group subjected to Near Fault Earthquakes – Kuang-Yen Liu, National Chengkong University, Tainan, Taiwan. (15:30-16:00) • Bayesian updating based model for the hydrodynamic added mass of the rectangular - Kai Wei, Department of Bridge Engineering, Southwest Jiaotong University, Chengdu, China (16:00-16:30) • Scour stability evaluation of bridge pier considering fluid-solid interaction – Tzu-Kang Lin, National Chiao Tung University, Hsinchu, Taiwan (16:30-17:00) • The NHERI Post-Disaster Rapid Response Research (RAPID) Facility: Tools for bridge engineering - Jeffery Berman, Professor of Civil & Environmental Engineering and Operations Director, NHERI RAPID Facility at the University of Washington (17:00-17:30) 	<p>Jerry Shen</p> <p>Yan (Helen) Xu</p>
17:30 – 18:00	<p><u>Closing Ceremony</u></p> <ul style="list-style-type: none"> • Closing Remarks – Open to General Audience for Comments and Remarks • October 4th, Site Visits - Bijan Khaleghi, WSDOT • Announcements 	<p>Phillip Yen</p> <p>(Dawn Lehman)</p>